## ABSTRACT

The present invention is based on a family of membrane proteins, Phospholipid Scramblases (PLSCR), that mediate accelerated trans-bilayer movement of plasma membrane phospholipids in response to elevated cytoplasmic calcium. At least one Phospholipid Scramblase gene is highly inducible by interferon. Interferon-induced expression of Phospholipid Scramblase 1 (and/or related genes) alters the physical and functional properties of the cell surface so as to (1) inhibit tumor cell proliferation and survival; (2) inhibit maturation and release of membrane-enveloped viruses; and/or (3) promote clearance of virus-infected cells and cancer cells through the reticuloendothelial system. The present invention provides Phospholipid Scramblase polypeptides, polynucleotide sequences that encode Phospholipid Scramblase polypeptides, and antibodies that are immunoreactive with the polypeptides. The finding that human Phospholipid Scramblase 1 polypeptides are induced by interferons, indicates a role for the Scramblase polypeptides in treating and preventing cancer and viral infection.